

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 96700/927		Date of mailing (day/month/year) 27 SEP 2005 FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/US04/39308	International filing date (day/month/year) 23 November 2004 (23.11.2004)	Priority date (day/month/year) 26 November 2003 (26.11.2003)
International Patent Classification (IPC) or both national classification and IPC IPC(7): A61K 48/00; C12N 15/63 and US Cl.: 424/93.2; 514/44; 435/320.1		
Applicant ALBERT EINSTEIN COLLEGE OF MEDICINE OF YESHIVA UNIVERSITY		

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Dave T. Nguyen <i>F. Roberts for</i> Telephone No. (571) 272-1600
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/39308

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 33

because:

☐ the said international application, or the said claim Nos. _____ relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 33 are so unclear that no meaningful opinion could be formed (*specify*):

Claim 33 is improper under PCT Rule 6.4(a).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

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Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
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International application No.
PCT/US04/39308

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 1-32 and 34-44 YES

Claims NONE NO

Inventive step (IS)

Claims NONE YES

Claims 1-32 and 34-44 NO

Industrial applicability (IA)

Claims 1-32 and 34-44 YES

Claims NONE NO

2. Citations and explanations:

Claims 1-32 and 34-44 lack an inventive step under PCT Article 33(3) as being obvious over CHRIST et al in view of DEAN et al, and in view of applicant's admission of the prior art as set forth on page 22 of the description.

All claims embrace a method of regulating smooth muscle tone, e.g., treating erectile dysfunction, wherein the method comprises administering a vector comprising a smooth muscle alpha actin (SMAA) promoter operably linked to a DNA coding for any know potassium channel protein that regulates smooth muscle tone.

CHRIST et al teach a method of regulating smooth muscle tone, e.g., treating erectile dysfunction, wherein the method comprises administering a vector comprising a tissue specific promoter operably linked to a DNA coding for any know potassium channel protein that regulates smooth muscle tone. See columns 13-14.

CHRIST et al does not teach that the tissue specific promoter is a SMAA promoter.

However at the time the invention was made, DEAN et al teach that a vector comprising a smooth muscle cell specific promoter operably linked to a gene of interest is effective for use in targeting the gene of interest to a cell (columns 3 and 4).

Thus, it would have been obvious for one of ordinary skill in the art to employ any know smooth muscle cell specific promoter such as the SMAA promoter of the prior art (see page 22 of the description) in the vector of CHRIST et al.

One of ordinary skill in the art would have been motivate to employ the SMAA promoter because CHRIST teaches that a tissue specific promoter can be used in their vector and because DEAN et al teach that a vector comprising a smooth muscle cell specific promoter operably linked to a gene of interest is effective for use in targeting the gene of interest to a cell (columns 3 and 4).

Thus, the claimed invention was *prima facie* obvious.

Claims 1-32 and 34-44 meet the criteria set out in PCT Article 33(4), and thus meeting industrial applicability because the subject matter claimed can be made or used in industry.